

**IN THE CLAIMS:**

Please amend the claims as follows:

1-15. (Canceled)

16. (Currently amended) A method for improving time precision in a network including a first clock and a second clock using a packet based network time protocol that is transmitted and received in accordance with a data packet transmission protocol that also includes an error checking code for use in detecting transmission errors in the received data packets, comprising:

determining a scheduled time of transmission when each packet containing network timing information is to be released for transmission from a respective first or second physical interface to the network;

writing the scheduled time of transmission and the associated error checking code in each outgoing information packet;

releasing each outgoing information packet at the respective physical interface when the first or second clock associated with that interface indicates that the current time is equal, within a predetermined precision, to the respective said scheduled time of transmission;

using the respective other clock to determine, within the predetermined precision, a time of reception when each released information packet is received at the other physical interface to said network;

storing said time of reception in an auxiliary timestamp external to the information packet in a manner that is transparent to said transmission protocol without any updating of said error checking code;

associating each auxiliary time stamp with the respective incoming information packet;  
and

using the time of reception data in the auxiliary timestamps and the scheduled time of  
transmission data in the information packets to synchronize the first clock to the second clock,

wherein said network time protocol is an existing time protocol and said transmission  
protocol is an existing transmission protocol.

wherein the arriving packets are sent to a receive buffer after the auxiliary timestamp has  
been stored and The method of claim 15

wherein no changes are made to physical layer drivers or to any of ISO rules for packet  
structure, at all network layers.

17. (Previously presented) The method of claim 16 wherein at least one said physical layer is a host physical layer to a network boundary.

18. (Previously presented) The method of claim 16 wherein the error check code is a CRC code, and a copy of the CRC code of a particular data packet is included in the associated auxiliary timestamp.

19. (Canceled)

20. (Currently amended) An apparatus for reducing the uncertainty in timing on a network comprising:

an auxiliary receive timestamp for associating an auxiliary timestamp to arriving  
packets before sending the packets to a receive buffer, wherein said auxiliary timestamp is in

addition to any existing network protocol timestamp and does not require the recalculation of any error checking code before the packets are placed in said receive buffer;

a transmit timestamper adapted to apply a future timestamp for packets to be transmitted at a scheduled future time together with any associated error checking code, and

a network transmitter adapted to hold and release the transmitted packets from a physical interface according to said future timestamps. The apparatus of claim 19

wherein:

the network is adapted to run according to ISO and TCP/IP rules, including packet structure rules including a CRC field; and

a media access controller extender apparatus transparent in operation to existing hardware, said media access controller extender being adapted to supply said auxiliary and future timestamps and utilize said auxiliary and future timestamps to reduce timing uncertainty on a network.

21. (Currently amended) The apparatus of claim 20 wherein:

said receive and said transmit timestamps are transmit and receive times of packets at physical interfaces and are supplied after the packet leaves the application layer, or is are read before the packet enters the application layer.

22. (Previously presented) The apparatus of claim 20, wherein said media access controller extender copies the contents of the CRC field into the associated auxiliary receive timestamp.

23-24. (Canceled)